

Subpart D

Walking/Working

Surfaces

(The following slides only scratch the surface of this subpart; make sure and read all relevant paragraphs within the standard carefully)

Sections

- **1910.21 Definitions**
- **1910.22 General requirements**
- **1910.23 Guarding Floor and Wall Openings**
- **1910.24 Fixed Ind. Stairways**
- **1910.25 Portable Wood Ladders**
- **1910.26 Portable Metal Ladders**
- **1910.27 Fixed Ladders**
- **1910.28 Scaffolds**
- **1910.29 Mobile Scaffolds Ladder Stands**
- **1910.30 Other Working Surfaces**

ANSI Standards

- **ANSI 10.8** **Scaffolding**
- **ANSI 12.1** **Railing**
- **ANSI 14.1** **Wood Ladders**
- **ANSI 14.2** **Metal Ladders**
- **ANSI 14.3** **Fixed Ladders**

Hazards Associated With Walking and Working Surfaces

- **Slips**
- **Trips**
- **Falls from Same Level**
- **Falls from Height**
- **Material Handling**
- **Means of Egress**
- **Fire**

Injuries

- **Contusions**
- **Broken Bones**
- **Fractures**
- **Concussion**
- **Death**
- **Back Injury**
- **Strains and Sprains**

Causes

- **System Overload**
- **Instability**
- **Improper Selection and Use of Equipment**
- **Inadequate Maintenance and Repair**
- **Departure from Manufacturer's Specifications**
- **Other**

Subpart D - Continued

- **Slips and Falls, VTO 1348, 1988,
Audio Visual Loan Service**

1910.21 - Definitions

- **(a)(1) - Floor hole: $<12'' \& > 1''$**
- **(a)(2) - Floor opening: $> 12''$ in least dimension**
- **(a)(10) - Wall hole: $<30'' \& > 1''$ high**
- **(a)(11) - Wall Opening $\geq 30''$
 $H \geq 18'' W$**

1910.22 - General Requirements

- **(a) Housekeeping (Clean, Orderly, Sanitary)**
 - (1) All places of employment; passageways; storerooms; service rooms**
 - (2) Floors**
 - Clean & Dry**
 - Wet processes used:**
 - # Drainage maintained (Shall)**
 - # False floors, platforms, mats, dry standing places (Should)**

1910.22 (Continued)

- **(b) Aisles & Passageways**
 - (1) Safe clearances/Clear & good repair/ No obstructions in aisles**
 - (2) Aisles/passageways marked**
- **(c) Covers & Guardrails**
 - Open pits, tanks, vats, ditches, etc.**

1910.22 (Continued)

- **(d) Floor Loading Protection**

(1) Every building, structure, part

**□ Mercantile, business, industrial,
storage**

□ Loads approved by building official

□ Marked & affixed in conspicuous place

(2) Unlawful to overload

1910.23 - Guarding Floor/Wall Openings

- **(a) Floor Openings**
 - (1) Stairway floor openings - guarded by
standard railing**
 - (2) Ladderway floor openings/platforms-
guarded by standard railing/toeboard**
 - (3) Hatchway/chute floor opening - guarded by
hinged cover or removable
railing/toeboard**
 - (4) Skylight floor opening/hole - guarded by
standard skylight screen of fixed standard
railing**
 - (5) Pit and trap opening-cover/attendant/railing**

1910.23 (Continued)

- (6) Manhole floor opening - guarded by standard manhole cover**
- (7) Temporary floor opening - guarded by standard railing**
- (8) Floor hole opening - guarded by standard railing or floor hole cover**
- (9) No openings > 1" on floor holes**

1910.23 (Continued)

- **(b) Wall Openings/Holes**
 - (1) Drop > 4' shall be guarded by:**
 - (i) Rail, roller, picket fence, half door/equivalent barrier**

- **(c) Open Sided Floors, Platforms, Runways**
 - (1) 4' or more above ground - guarded by standard railing**

 - (3) Adjacent to Dangerous Equipment (regardless of height) - guarded by standard railing/toeboard**

1910.23 (Continued)

- **(d) Stairway Railings & Guards**
 - (1) 4 or more risers: standard stair railings**
 - (i) $< 44''$ W/both sides enclosed:**
handrail right side descending
 - (ii) $< 44''$ W/one open side: at least one railing on open side**
 - (iii) $< 44''$ W/both sides open: stair railing each side**
 - (iv) $> 44''$ W but $< 88''$ W: handrail on enclosed sides/stair railing on open sides**
 - (v) $\geq 88''$ W rail down center of stairway: Handrail enclosed/stair rail open sides**

1910.23 (Continued)

- **(e) Railing, Toeboards & Covers**

- (1) Standard railing**

- ▯Top rail: smooth surface; 42"H**

- ▯Intermediate rail**

- ▯Posts**

- (2) Stair Railing (similar to standard railing)**

- ▯Top rail not >34" nor <30"**

- (4) Standard Toeboard: 4" nominal height**

1910.24 - Fixed Industrial Stairs

- **(b) Fixed Stairs Required:**
 - ▯ **Access from one level to another**
 - ▯ **Where operations require regular travel between levels**
 - ▯ **Access to operating platforms**
 - ▯ **Access to elevations daily/at each shift for:**
 - +Inspections**
 - +Gauging**
 - +Regular maintenance, etc.**

1910.24 (Continued)

- **(c) Stair Strength**

- **5 times normal live load anticipated, but**
 - **Never < strength to safely carry moving concentrated load of 1,000 lbs.**

- **(d) Stair Width**

- **Minimum width of 22"**

- **(e) Angle of Stairway Rise: Table D-1**

1910.24 (Continued)

- **(f) Stair Treads**

- ▯ **Slip resistant**

- ▯ **Nosings of nonslip finish**

- **(g) Stairway platforms**

- ▯ **No less than width of stairway**

- ▯ **Minimum of 30" L**

1910.24 (Continued)

- **(h) Railings & Handrails**

- ▮ **Standard railings: open sides of exposed stairways & stair platforms**

- ▮ **In accordance with 1910.23**

- **(i) Vertical Clearance**

- ▮ **7' to overhead obstruction from tread**

1910.25 Portable Wood Ladders

- **(b) Materials**

- (1) Requirements applicable to all wood parts**

- (i) No sharp edges/splinters**

- No low density wood construction**

- Free from shake/wane/decay/compression failure**

1910.25 (Continued)

- **(c) Construction requirements**

- (2) Portable stepladders**

- Longer than 20' not permitted**

- 3 types**

- +Type I: Industrial; 3-20'**

- +Type II: Medium Duty; 3-**

12

- +type III: Light Duty; 3-6**

1910.25(c) - (Continued)

- **(c)(2)(i) General Requirements**

- (b) Uniform step spacing not $>12''$

- (c) Not $<11\frac{1}{2}''$ minimum width between side rails

(3) Portable Rung Ladders

- (ii)(a) Single ladder: not longer than 30'

- (iii)(a) Two section ladder: not longer than 60'

(4) Special Purpose Ladders

- (ii)(a) Painters stepladder: not longer than 12'

- (iii)(a) Mason's ladder: not longer than 40'

(5) Trolley & Side-Rolling Ladders

- (i) Not longer than 20'

1910.25 (Continued)

- **(d) Care & Use of Ladders**

- (1) Care**

- (i) Good condition**

- (iv) Safety feet/auxiliary equipment: good condition**

- (x) Inspected frequently, if defective, withdrawn from service for repair or destruction**

- (xi) Rungs kept free of grease & oil**

1910.25 (continued)

- **Other care and use issues**
 - **Ladder stable or held or latched in place**
 - **Tops of step ladders shall not be used**
 - **Top of ladder extend 3' above support**
 - **Ladder angle: ladder base located $\frac{1}{4}$ the working length from the vertical support**
 - **Manufacturer's Specifications**

1910.26 - Portable Metal Ladders

- **(a) Requirements**

- (1) General**

- (iii) Rung spacing: 12" centers**

- (2) Straight/extension ladders**

- (i) Minimum width between side rails: 12"**

- (ii) Length single/individual ladders: not >30'**

- ▯Two section ladders: not >48'L**

- ▯Over two section ladders: not >60'L**

1910.26(a) - (Continued)

- **(a)(3) Step Ladders**

(iii) Not > 20'L

**(4) Trestles/Extension Trestle
Ladders**

(i) Not >20'L

(5) Platform Ladders

(i) Not >20'L

1910.26 - (Continued)

- **Refer to 1910.333 Working on or near exposed energized parts**
 - **(c)(7) Portable Ladders**
 - Portable ladders shall have nonconductive siderails

1910.27 - Fixed Ladders

- **(b) Specific Features**

- (1) Rungs & Cleats**

- (i) Metal ladders: minimum diameter $\frac{3}{4}$ "**

- Wood ladders: minimum diameter 1 $\frac{1}{8}$ "**

- Where corrosion/rusting: minimum diameter 1" or painted {27(b)(7)(i)}**

- (ii) Distance between rungs: 12"**

- (iii) Minimum length of rungs between side rails: 16"**

- **(c) Clearances**

- (4) In back of ladder: not < 7"**

1910.27 - (Continued)

- **(d) Special Requirements**

- (1) Cages or Wells**

- (ii) Provided on ladders > 20' to maximum 30'L**

- (iv) Cages extend down ladder not < 7' or > 8' above base of ladder**

- (2) Landing Platforms**

- Ladder with cage: for each 30'H**

- Ladder/no cage: for each 20'H**

- (5) Ladder safety devices may be used in lieu of cages on towers, water tanks, and chimney ladders. No Landing platform is required in these cases.**

1910.28 - Safety Requirements for Scaffolding

- **(a) General: all scaffolds**
 - (2) Sound, rigid footing (anchorage)
 - (4) Capable of supporting 4 X maximum intended load
 - (11) Planking/platforms overlapped minimum 12"
 - (12) Access ladder/equivalent provided
 - (13) Scaffold planks extend:
 - ☐ Not less than 6"
 - ☐ Not more than 18"
 - (17) Screen between toeboard & guardrail
 - (22) Wire rope/scaffold suspension
 - ☐ Supporting 6X intended load

► From end supports

1910.28 - Safety Requirements for Scaffolding

- **Fall Protection:**
 - **Standard Guardrailing**
 - **Personal Fall Arrest System (Subpart M 1926)**

1910.28 - Continued

- **(b) General Requirements Wood Pole Scaffolds**
- **(c) Tube and coupler scaffolds**
- **(d) Tubular welded frame scaffolds**
- **(e) Outrigger scaffolds**
- **(f) Masons' adjustable multi-point suspension scaffolds**
- **(g) Two-point suspension scaffolds**
- **(h) Stone setters' adjustable multi-point suspension scaffolds**

1910.28 - Continued

- **(i) Single-point adjustable suspension scaffold**
- **(j) Boatswain's chair**
- **(k) Carpenters' bracket scaffolds**
- **(l) Bricklayers' square scaffolds**
- **(m) Horse scaffolds**
- **(n) Needle beam scaffold**
- **(o) Plasterers' and large area scaffolds**
- **(p) Interior hung scaffolds**
- **(q)....(u)**

1910.28 - Continued

- **“A Basic Look at Scaffolds for Compliance Officers”, VTO 1259, 2000 (Audio Visual Loan Service)**
- **Corresponding Subpart in 1926 Construction: Subpart L**
- **Competent Person**

Propelled Mobile Ladder Stands and Scaffolds

- **General Requirements:**
 - **No Sharp Edges**
 - **Stable**
 - **Guardrails and Toeboards work levels ≥ 10 feet**

1910.30 - Other Working Surfaces

- **(a) Dockboards (Bridge Plates)**

- (1) Strong enough to carry load

- (2) Portable dockboards

- ▯ Secured in position

- ▯ Anchored/equipped with anti-slip devices

- (4) Handholds/other means for portable dockboards

- (5) Positive protection/prevent railroad car movement while dockboards/bridge plates in position